

AMATEUR SATELLITE REPORT

AMSAT® NA Newsletter for the Amateur Radio Space Program



Amateur Satellite Report is endorsed by the American Radio Relay League as the special interest Newsletter serving the Amateur Radio Satellite Community

Number 192
December 15, 1989

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Field Day Revisited — Part II

By Dick Campbell, N3FKV

That brings me to my second comment. There has been some discussion in the Amateur press, and I have had it expressed to me, that satellites are a rich man's mode. Unfortunately, in my Club newsletter articles and talks I give to local clubs, I have difficulty dispelling this notion.

On the one hand, yes, you can spend \$5,000-\$10,000 on a satellite station. But you can also do it for less than \$1,000 if you are resourceful, like to homebrew, like to scrounge, and also have some patience. I have taken a poor man's building block approach, since I'm basically cheap and don't like to lay out big bucks all at once.

If you consider the new Technician (or even old hf op), they will have an hf rig and at least a dipole, and probably a two-meter FM rig with a vertical. They may or may not have a computer for tracking, but it is not really needed. Unfortunately, the first step is the biggest. You have to have another rig, no way around it. Preferably a two-meter all mode, but at least another hf transceiver. I acquired a used two meter SSB/CW 10W rig at a Hamfest — get what you can afford.

Now you are ready to work Mode A CW, that's RS-10/11 and soon RS-12/13, with your dipole and vertical. You probably won't have super success except on perfect passes because of limited uplink power and weak receiver sensitivity. First, I added a ten-meter GaAsFET preamp, the Hamtronics \$24 kit, and then put up a ten-meter turnstile cut for 29.4 MHz. The improvement in downlink signal was remarkable! Later on, when I had some more bucks, I built the CCI two-meter 75W linear and put up a five element two-meter beam on a TV rotor (also used). I was now able to work some very nice QSOs on SSB with reliable reception. Investment so far was \$300 spread over about six months (remember, patience). However, a lot of the fun was trying to make CW contacts with the more limited setup.

The next bird to go for is FO-12 because it also has a two-meter uplink and we already have that. I just tilted the beam (pointed it up) 25 degrees fixed. Remember, FO-12 is also in a low-Earth orbit, so power requirements are still low. The downlink is on 435 MHz. Since you already have a hf

rig, you can add a 435-28 MHz downconverter and preamp. Again, I went the Hamtronics kit route, \$74 for both and they perform very nicely. I constructed a 70cm helix out of tomato stakes and RG8 coax and a piece of wire mesh from the local hardware store. The articles in the ARRL *Antenna Book* and the *Satellite Experimenters Handbook* are easy to follow. The preamp/downconverter are mounted on the helix groundplane in a watertight box. The biggest bugaboo is that this antenna has to be pointed at the bird in elevation as well as azimuth, and here is where things start to get involved. I picked up a couple of used rotors at Hamfests, bought a roof tripod and started bolting everything together. I was also fortunate to acquire very cheaply, a KLM 14C in excellent condition.

Note that when this rig is up, you can also work AO-13 Mode J. Now we have a three-bird capability, and it has taken about a year and no more than \$600 total. This should keep anybody busy for a while. The station is a completely manual operation, but it is fun to operate and also to hear some surprised comments on downlink, when I tell them what I'm running.

As for current plans, I just finished building a 28-435 transverter and bought an ARR two-meter GaAsFET preamp. I try not to skimp on the receive side or on quality coax.



Franklin Antonio, N6NKF, developer of INSTANT TRAK satellite tracking software, shown with his new IC-475A donated by ICOM America to the Annual Space Symposium. (Photo by K8OCL)

To summarize, start out with Mode A. It's a simple setup, easy to work, you will learn some strange operating techniques, tracking problems, equipment glitches, and this mode can keep you quite busy. I'm still trying for WAS on RS-10. Ray Soifer, W2RS, is right on with his remarks, and Max Bodenhausen, W0ZZQ (isn't that a neat call!) has a good idea with the Mode A MicroSat. A sun-synchronous Mode A bird at FO-12 altitudes could provide a wealth of easy "low-tech" operating.

Whew! I didn't realize I'd written so much. Feel free to use any or all of this, as you see fit, or pitch it. Since all of the above has happened, I have moved to Waco, TX from Maryland. I haven't been able to get all the antennas up yet, and I have to fix a broken rotor, but we're working on it. Hope to catch you on a bird, probably RS-10/11. The ASRs look nice too, and right now are my only link to what's going on in AMSAT. I hope I can get involved more down here. Thank you for your time with this.

DX'ing the OSCAR'S

By John Fail, KL7GRF/6

New/Interesting DX Stations recently Heard/Worked:

STATION	SATELLITE	MODE	QSL INFO
DA4ZV	AD-13	Mode B SSB/CW	Callbook address
YI1BGD	AD-13	Mode B SSB	YI1BGD oper. instructions
FM5AB	AD-13	Mode B SSB	Callbook address
HL9KT	AD-13	Mode B SSB	KL7GRF/6. HL9KT is now QRT
F05LQ	AD-13	Mode B SSB	Callbook address
DU3/KE0SC	AD-13	Mode B CW	Home call
YN3UNI	AD-13	Mode B/J SSB	K7PYK
HC5K	AD-13	Mode B SSB	KT1N
6W1QA	AD-13	Mode B SSB	D85PW
TU4DA	AD-13	Mode B/J SSB	F6FNU
VU2LO	AD-13	Mode B/J SSB	Callbook address
Y02IS	AD-13	Mode B RTTY	Callbook address
LX1RB	AD-13	Mode B SSB	Callbook
PJ2CR	AD-13	Mode B SSB	Callbook
PJ2MN	AD-13	Mode B SSB	Callbook or Box 3255 Curacao
9M2CR	AD-13	Mode B SSB	Callbook address, add post code "71000" to address
J37BG	AD-13	Mode B SSB	Box 373 St. George's Grenada, Windward Islands
ZK1WL	AD-13	Mode B/J SSB/CW	P.O. Box 855 Rarotonga, S. Cook Is. Warwick is actually in the N. Cook Is. but all Mail goes via S Cook Is.
KH2/W1YRM - R1MRy	AD-13	Mode B SSB	Dave Chartier Pacific Daily News P.O. Box DN Agana, Guam 96910
TK5CI	AD-13	Mode B SSB	FE1HWB - I could not find an address in B9 callbook for the manager. Although I suspect that FE1HWB who "is" in the callbook may actually be the correct call for the manager. Suggest you QSL directly to TK5CI via: Jean Gelormini F-20240 Ghisonaccia Corsica Island
HK3GKE	AD-13	Mode B SSB	Box 1456, Bogota, Columbia
OK2AQK	AD-13	Mode B SSB	Callbook/Bureau
KL7ZM	AD-13	Mode B SSB	Callbook
AL7JM	AD-13	Mode B CW	Callbook/Bureau
RA0DAC	AD-13	Mode B SSB	Box 88 Moscow
HB0HTA	AD-13	Mode B SSB	Callbook
TK5AF	AD-13	Mode B SSB	Callbook
9H1EJ	AD-13	Mode B SSB	Callbook/Bureau
LZ1QM	AD-13	Mode B SSB/CW	Box 90, Sofia 1000, Bulgaria
CT1WW	AD-13	Mode B SSB	Callbook/Bureau
VS6VU	AD-13	Mode B SSB	Dave Gynn Box 541 Hong Kong
9M2CS	AD-13	Mode B SSB	Callbook/Bureau
4X1MK	AD-13	Mode B SSB	Callbook/Bureau
YU3N	AD-13	Mode B SSB/CW	Via YU3TA
NN3N/9M6	AD-13	Mode B SSB	Via KL7GRF/6
KE0SC/DU	AD-13	Mode B SSB	2028 W. North Street Road. Salina, Kansas 67401
VU2DVP	AD-13	Mode B SSB	Box 6330 Coimbatore 37 India Do not send Green Stamps, Use IRC's only (2). Do not QSL to the VU Bureau
ZS3DM	AD-13	Mode B SSB	D. Milligan, Box 62 Hentiesbaai 9181 Namibia
XX9KA	AD-13	Mode B SSB	Via KC9V Betty Collins Box 263 State Line, IN 47982
JU3LX	AD-13	Mode B SSB	Via JT1KAA Box 639 Ulan Bator, 13 Mongolia

DX Notes:

The 1989 DX callbook listing for 4S7AVR is incorrect: QSL 4S7AVR via Noel Lokuge, 15/2 Balahenmulla Lane, Colombo 6, Sri Lanka, ASIA. Noel's son; Ramish, 4S7NMR is also occasionally active, QSL via KZ8Y.....YI1BGD now has a 100 Watt amplifier. Look for YI1BGD on OSCAR-13 around 0400 UTC.....Micheal, HL9KT will be QRT from the Satellites by the time you read this. There is a possibility that Micheal may QSY to 9M6 from Korea, more on this later.....Wes, YN3UNI will be active from Nicaragua for the next 2 years, QSL to K7PYK.....From the latest info I have available the QSL cards for the XF4L expedition will be mailed on 15 October 1989, the cards for the 4J1FS operation will be mailed on 15 November 1989.....Lok, VU2LO reports he worked TF3SF on AO-13 in July.....The recent mail strike in Guatemala is now over. Those of you who had QSL cards for contacts with TG9SO returned due to the strike should now re-send cards to Bob at Box 144-A Guatemala City, Guatemala 01909.....There is a good possibility of a DX-pedition to J8 (St. Vincent) by K7MNK in April or May of 1990. More on this one as it develops.....Herb, KV4FZ was to be active soon on OSCAR-13, however, Hurricane Hugo may have precluded the impending operation by Herb.....Rare U.S. States heard on OSCAR-13: VERMONT - KU1H and WB2MIC/1, RHODE ISLAND - KB1UZ, OKLAHOMA - KE5TS.....For those of you who missed Tony, P4/KP4EKG while in Aruba, take heart!, Tony's operation generated a lot of interest among the local P4's and we suspect that P43AS may be getting OSCAR equipment and getting on soon..... Gene, AA6NP spoke with a XX9 on 20M recently that expressed high interest in getting on OSCAR.....FH8CL is in France on holiday, he will return to Mayotte in December.....

JU3LX, (Mongolia), mentioned above is indeed a very rare catch on any band much less the Satellites. Apparently he has been worked by one or two Europeans. I do not know anyone who has actually worked him. All of the information I have received regarding JU3LX is at least "Third



Hand towel spotted in Iowa. Anyone read the message?

hand". According to sources, JU3LX says he will be on AO-13 at 0900 UTC daily.....Rare U.S. States heard on the bird; RHODE ISLAND - KA1AJF, MONTANA - KB7UZ, UTAH - K7SAJ, DELAWARE - KD3OJ.....5B4TI in Cyprus says on hf that he may be getting on the birds soon.....For those who worked H44PT on AO-10 a few years ago and never got a QSL card; try sending a card to G8BCG Peter Taylor, 6 Bray Court, Plantation Road, Amersham, Buckinghamshire, England, HP66JB.....Alan, VE6LQ recently spoke with King Hussein of Jordan (JY1) on 40M while the king was visiting Edmonton, Canada. The King said he would be active on OSCAR-13 "very soon". The only previous activity on OSCAR from JY was JY4MB on AO-13 who is rarely on the air.....Be patient on the QSL cards from P4/KP4EKG, Hurricane Hugo did considerable damage in Puerto Rico and Tony is still cleaning up the mess. On top of that, the QSL printer messed up the cards and Tony had to send them back to be reprinted again.....Above I referred to use IRC's when QSL'ing to VU stations. The U.S. dollar is not a legal currency in India and indeed causes problems for the Amateurs there. The QSL bureau in India has been closed for over a year and you should not send QSL's to the Indian Bureau.....Micheal, NN3N/9M6 appeared on OSCAR-13 on October 21 operating from Kota Kinabalu, Sabah. He will soon be using his soon-to-be assigned call of 9M6KT.....

Upcoming OSCAR DX-peditions:

ZS3 (Namibia) by ZR1L (hopefully by the end of 1989) HI8 (Dominican Republic) by KP4EKG November 24, 25, 26, 1989. QSL to KP4EKG KP5 (Desecheo Island) by KP4EKG early 1990. 3Y0B (Bouvet Island) First two weeks in Feb 1990, QSL to WA9VGY C6/DG1PJ (Bahamas) Dec 15, 1989 thru June 1990, QSL to C6ANV FY0EK (French Guiana) during MicroSat launch campaign in January.....GD/GB8RRG (Isle Of Man) (dates not certain) for 4 or 5 days, QSL to GB8RRG

Thanks to:

Several active OSCAR-13 users have contributed to a fund to purchase a 88 element J-Beam for Tony, KP4EKG to use on OSCAR DX-peditions in 1990. Tony will be on the air from several Caribbean countries in 1990. Thanks to N8DEZ, W4BE, K7HDK, VE4AMU, KC0TO, KB2E, W4NTG, N4OUL, VE6LQ, W6QUV, W0ZZQ, K5RPX and KF6EN for their kind and generous donations. Any "overflow" will be earmarked for additional equipment, QSL cards etc. for future DX-peditions. Contributions go to W6QUV.

Rules for Increasing your QSL Rate:

QSL'ing DIRECT:

1. Make sure you take the time to make out the card neatly and legibly so that the DX station can easily read the date/time of the QSO and find it in his log quickly. Don't forget to include all pertinent information on the card such as: date, time, RST, mode, "VIA OSCAR-13 MODE B" etc.
2. Include the appropriate number of IRC's (or green stamp(s)). Some countries require several IRC's for return postage. Check the callbook for the appropriate amount of IRC's or green stamps to include.
3. Some DX stations use an "oversize" card and it might be a good idea to always include a large return envelope

to accommodate for this.

4. Fill out the SAE carefully and legibly with your name, address etc. (or use a rubber stamp).

5. It is suspected by many that the use of callsigns on the envelope sent to the DX station alerts certain less than honest postal employees to the fact there might be cash in the envelope. It would be a good idea to address the envelope to the DX station using a typewriter or computer printer without the callsign (avoid using labels, they make the mail look like "junk mail") making the envelope "look official".

6. QSL promptly after the contact. Often including a photo of you or your station will enhance your chances of getting a card.

7. Be sure the envelope you send to the DX station clearly includes your return address in case the envelope is undeliverable for one reason or another you will get your IRC's/green stamp(s) back.

QSL'ing VIA QSL Managers:

1. Follow the above rules.
2. Make it as easy as possible for the QSL manager to respond to your card. Be sure to include the IRC's, green stamp etc.
3. Be sure to enclose the SAE. I am QSL manager for several stations and sometimes get QSL cards that do not include an SAE. Invariably these cards wind up on the bottom of the stack for addressing of envelopes "when I have time".
4. Keep in mind that sometimes it takes a long time for a DX station to forward logs, cards etc. to a manager. Have patience!

Hints on Working DX-peditions (or any "rare" DX Station):

DX-peditions are typically short in duration and are intended to work as many stations as possible in the period of time the expedition is on the air. Developing good operating habits will enhance your chances of working the expedition. Good operating habits help the "other guy" to work the expedition also. The most important habit to develop is "LISTEN, LISTEN, LISTEN" before transmitting.

Satellite operations are unique in that you must "match" your uplink and downlink frequencies. The absolute worst thing you can do is match your uplink and downlink on top of the DX-peditions downlink frequency. I have heard many, many stations talking themselves in on top of the DX-pedition downlink with the standard "HHHEEEEEELLLLLLOOOOO" (or dit-dit-dit-dit in CW or swishing a carrier across the downlink) thereby interfering with the QSO between the expedition and a station further slowing down the expedition operator (not to mention the irritation to everyone on the frequency).

LISTEN, LISTEN, LISTEN to the DX station instructions, he may be working "split" (i.e. transmitting on one downlink and listening on another). A good DX operator will often announce he is listening "UP 10" etc.

1. Don't tune up and "find" yourself on the DX station downlink. It is a very simple matter to find yourself without causing QRM to the expedition downlink.

- a. Tune in the DX station on your receiver.
- b. Tune your receiver up exactly 10 kHz from the DX station.

- c. "Find" yourself on the receiver downlink
- d. Move your receiver back to the DX station.
- e. Move your transmitter up exactly 10 kHz.
- f. Call the DX station making finite adjustments to the transmitter as you call.
- g. You have gotten yourself on the DX station frequency with a minimal amount of QRM (if any!).

If the DX station is working "split" take the time to calculate the proper uplink frequency to fall in the downlink area that he is listening in. Don't transmit on the DX station downlink; 1. he can't hear you and, 2. you only cause QRM to others trying to work him.

2. One of the very worst habits you can develop is to transmit while you are listening on the station speaker. This is a bad habit at any time on the Satellites. USE HEADPHONES!!!!. Listening to yourself using the station speaker causes the downlink heard through the station speaker to be re-transmitted as feedback. In most cases it is practically impossible to copy a station using a speaker instead of a set of headphones to receive the downlink. All this does is make it difficult for the DX station to copy you and slows things down.

3. When calling the DX station:
 - a. LISTEN, LISTEN, LISTEN!! Before transmitting, make sure the DX station is ready to work the next station. The DX station or expedition may be working by call areas or specific regions such as Europe, Asia etc.
 - b. Don't bother with his call when calling, he knows his own call!!
 - c. Speak concisely when calling.
 - d. Don't repeat your callsign over and over. Twice is fine.
 - e. Just give your own call, don't add frivolous things such as "CALIFORNIA CALLING, THIS IS KL7GRF/6". Just "KILO LIMA SEVEN GERMANY RADIO FLORIDA" will do just fine.

- f. Be consistent when giving your call phonetically, use the same phonetics, don't change "SIERRA" to "SANTIAGO" and back again. In some cases a pronunciation of a particular phonetic may cause difficulty. If the DX station asks for your call again give the same phonetics but change only the phonetic that is causing the difficulty.

4. After you have called:
 - a. LISTEN, LISTEN, LISTEN!! Don't just keep calling in the blind. It is incredible how many stations just keep on calling and don't even realize that the DX station has responded to another station and is trying to work him while you are causing all kinds of QRM. Too much of this rude and un-professional tactic might get you on a "black list" for a QSL card from the DX station.

- b. One technique employed by Chip Margelli, K7JA, when he was at 4J1FS was a very effective one. When Chip got a callsign out of the pileup calling he would "whistle" loudly signifying that he had gotten a callsign and everyone should standby while he worked the station heard;

"WHISTLE", HB9RHV THIS IS 4J1FS, FIVE AND NINE GO AHEAD

This technique is effective only on Satellites in that Satellite operation is full duplex.

5. When the DX station responds:
 - a. Remember that in all probability there are many

others waiting on the frequency to work the station. There may also be others who have modest stations (10 Watts to Cushcraft antennas etc.) that would like to work the DX station. PLEASE, BE BRIEF!!!

- b. In the case of a full-blown DX-pedition, give a signal report and immediately turn it back to the DX station: "ROGER, YOU ARE 5 AND 9 OVER"

Don't give your grid locator, city, state, and the name of your first born cat unless the DX station asks for it.

- c. For a normal (non-expedition) DX station, give a signal report, your name and location and turn it back to the DX station. If the DX station wants to "ragchew" he will let you know easily enough.

- d. Don't expect to "ragchew" with a DX-pedition, the purpose of the DX-pedition is to work as many stations as possible. It is typical on the birds to have large pileups during the early days of the expedition but they have a tendency to "burn out". If the pileup has burned out, the operator will make it known that he is willing to ragchew.

- e. In the case of a DX-pedition don't ask for QSL information and other frivolous information. It only slows things down. Most expeditions publicize the QSL information well in advance of the trip. Usually you will find QSL information in this column or it is available from several DX'ers on the bird (try 145.890).

6. Finally:
 - a. DON'T CALL JUST TO SAY "HELLO!"!! If the DX station has run out of "pileup" he will make it known if he wants to ragchew.

- b. DX-peditions cost money. It is a nice gesture if you include an extra green stamp(s) to help with printing QSL cards etc.

Congratulations to:

Jussi, OH5LK for earning the ARRL DXCC award by confirming 100 countries on the birds.

Next Time:

How to use the AMSAT and ARRL QSL bureaus. Information on the Bouvet Island (3Y0B) DX-pedition slated for February 1990.

Thanks to all of you who have passed information to me in the mail and on the air for inclusion in this column. Space precludes listing all of you. If you have information on new DX stations on the birds, upcoming OSCAR DX-peditions or general DX info send it to me at the below address or look for me on Mode-B on 145.890 or Mode-J 435.960. Late breaking DX information is often available from several DX'ers on Mode B 145.890.

I would like to obtain pictures of DX stations and their shack and antennas for future inclusion in this column. Please send them to: John Fail, KL7GRF/6, 6170 Downey Avenue, Long Beach, CA 90805 U.S.A.

AMSAT-OSCAR-13 ZRO TEST SCHEDULE November 1989 - January 1990

The ZRO Memorial Technical Achievement Award Program, or just "ZRO Test" will be reactivated in late November following the mid-November reorientation of AMSAT-OSCAR-13. This activity is a test of operating skill and equipment performance.

Three "JL" tests have been added to the schedule. They will be conducted by Cliff, W6HDO. The 02 Dec 89 test will cover all of North America and Europe in addition to most of South America and Africa. The 16 Dec 89 test will cover North America, eastern Australia, Southeast Asia and Japan. The 06 Jan 90 test will be heard in central and western U.S., Japan, Southeast Asia and most of Australia.

The following schedule of Mode "B" and "JL" ZRO tests were chosen for convenient operating times and favorable squint angles. The "B" tests can be heard on 145.840 MHz and the "JL" tests on 435.945 MHz.

Saturday	December 16, 1989 at 1830 UTC "JL"
Saturday	December 16, 1989 at 2000 UTC "B"
Saturday	December 30, 1989 at 1600 UTC "B"
Saturday	January 06, 1990 at 1800 UTC "JL"
Saturday	January 13, 1990 at 1200 UTC "B"
Saturday	January 20, 1990 at 1530 UTC "B"

Any changes will be announced as soon as possible via the AMSAT hf and AO-13 Operations Nets. Recently updated ZRO brochures are available from WA5ZIB, Andy MacAllister, AMSAT V.P. User Operations, 14714 Knightsway Drive, Houston, TX 77083 for a s.a.s.e. with appropriate postage (\$0.45 U.S., \$1.35 overseas). The brochure characterizes test procedures, means for obtaining certificates and gives historical background about the program.

All listener reports with date of test and numbers copied should be sent to WA5ZIB at the address above. A report will be returned verifying the level of accurate reception. Good luck!

Suggested AO-13 Operation Guidelines

(1) Use SSB and CW, and avoid continuous duty cycle modes except on appropriate calling frequencies, i.e. 145.880 MGz for RTTY and 145.888 MHz for SSTV.

(2) Put most of your effort (and money) into the receive side of your OSCAR station. Your goal is to be capable of hearing the weakest signal on the satellite with 100% understanding.

(3) If you need more than 40 Watts to use AO-13, you probably haven't put enough effort into your receive system.

(4) Never allow your own signal to be so loud that it peaks above that of the General Beacon. Be careful, since the AO-13 beacon also peaks, you should never be stronger than the beacon at any time.

(5) If you need to synchronize your uplink and downlink signal, do so *only* on an unoccupied segment of the AO-13 passband. To avoid causing interferences, never sync your uplink and downlink near another station.

(6) When moving your own transmitter to another frequency, never hold your key down, or your mike button down while talking, and swish your VFO around. You will cause interference to others.

(7) When testing your own signal, always give your station ID (call letters) every few minutes. It is simply rude to others to hear signals gargling for minutes on end, saying, "HHH---EEEE---LLL---OOOOOOOOOOOOOOO."

(8) Be courteous to others already on a frequency no

matter what language they are speaking.

(9) When you hear a pile-up on a "rare DX station," do not sync your up and downlink on top of the pile-up.

(10) Also, when calling in a pile-up, *do not* call continuously! Give your entire callsign using ITU phonetics no more than two times and then listen! Do not call the station again until they ask to be called.

(NOTE: The above were adapted from guidelines previously published by our colleagues in AMSAT-UK.)

ZRO Numbers

By Andy MacAllister, WA5ZIB
AMSAT-NA VP-User Operations

The first round of ZRO tests via AO-13 concluded on March 5, 1989. It has been over three months since then, and in accord with the rules of the ZRO program, the key numbers used for those runs can now be released. If you listened to the CW numbers sent during any of the ZRO runs listed below, but never submitted a reception report to WA5ZIB, now is your chance to check your copy with the master list. Please note that reports for any ZRO test must be submitted within 120 days after the monitored run if you wish to apply for a certificate or additional endorsement stickers.

DATE	00000	11111	22222	33333	44444	55555	66666	77777	88888	99999
14JAN89	46786	81064	23951	*****	08322	11764	99525	58131	04027	*****
04FEB89	03295	62987	46786	18652	73854	33290	26817	55634	10825	46463
25FEB89	16942	76897	60623	34295	97218	23720	42913	76813	06752	12304
04MAR89	12962	31250	26192	14543	90872	71956	85612	43578	13227	60523
05MAR89	45687	13827	03290	46823	98123	23314	67652	98610	27925	63650

(***** = not sent)

Good luck with the test schedule starting in November and be sure to send reports to Andy MacAllister, WA5ZIB, 14714 Knightsway Drive, Houston, TX 77083.

JAS-1 QRT

By JARL

Amateur satellite JAS-1/Fuji-OSCAR-12 has operated for three years. Power generation has, however, decreased with time, and at present, its average power generation is less than 3 Watts, which is difficult to keep even at Mode D,



John Shew, N4QQ, Bob McGwier, N4HY, and Brooks Van Pelt, KB2CST, discuss the inner workings of a DSP modem/TNC under development. (Photo by WA5AIB)

the minimum power requirement.

Therefore, after deliberation, it has been decided that the operation of FO-12 should be terminated.

It is our great pleasure to realize that we were able to provide chances of satellite communication, especially, the flying BBS, and taking this opportunity, we thank all satellite enthusiasts for having contacted with the bird.

Now, we are preparing the next bird JAS-1b, as the successor of FO-12, which has the same mission configuration as that of FO-12, except for its orbit. Please look forward to its launch in February 1990.

Operations Nets Schedule

By N5BF,
Net Manager

Following is the schedule for Operations Nets for the next several weeks. Note that times may change by up to half an hour depending on the satellite mode switch schedule. Watch ANS and the nets for further information.

16 Dec 89	1830	Saturday	435.970	N5BF	??	KO5I
30 Dec 89	1415	Saturday	435.970	N5BF	??	KL7GRF
07 Jan 90	1700	Sunday	435.970	??	??	
20 Jan 90	1400	Saturday	435.970	N5BF	??	

change to 210/2 with new schedule

03 Feb 90	1345	Saturday	145.950	N5BF	??	
10 Feb 90	1545	Saturday	435.970	N5BF	??	
18 Feb 90	0530	Sunday	145.950	N5BF	??	

Doug Loughmiller, KO5I, AMSAT-NA President and General Manager is to be the featured guest on the 16 December net.

On 30 December, John Fail, KL7GRF, will be discussing satellite DXing, presenting operating hints and information about the upcoming DX-pedition to Bouvet Island.

BoD APPROVES BYLAW AMENDMENTS

By Ray Soifer, W2RS
VP-Special Projects

Last year, the BoD approved an extensive revision of AMSAT-NA's bylaws. The new rules, which are now in effect, were reviewed by the Board at its November meeting. As a result, two amendments were approved; in accordance with Article IV, they will take effect 30 days after the mailing of this publication unless written objections shall have been received from at least 10 percent of the members.

The first of the approved amendments clarifies the duties of the President by providing that the BoD may, if it wishes, assign coordination responsibilities for some functions to another person, e.g., the General Manager. In addition, language requiring the President to serve as Chairman of the Board in the latter's absence was deleted since there is no requirement that there be a Chairman at all unless the BoD elects one.

The second approved amendment deals with procedures for the election of Directors. It permits greater flexibility in scheduling the Annual Meeting and Space Symposium by deleting the requirement for 180 days' advance notice of the date and time. Deadlines for nomination and voting will no longer be tied to the meeting date. Instead, nominations will be due on June 15. Ballots, which must be sent out by July 15, will be due on September 15 and results must be announced by September 30. In addition, the procedures currently used to circulate candidates' statements are described and provided for.

The amended text of the affected sections follows. Please refer to the complete bylaws as published in ASR 187, dated March 14, 1989.

ARTICLE II:

Section 5: The duties of the Officers shall be as follows:

A. The President shall preside at the Annual Meeting and at all other meetings of the membership. Except as the Board may direct, the President shall be responsible to the Board for coordinating all activities of the corporation and for all matters not otherwise assigned herein or by the Board. The President shall report to the Board at each meeting on the status of the corporation's affairs and shall, as required by the Board, prepare and distribute a proposed budget of the corporation's expenditures, prepared according to the system of accounts prescribed in this Section 5, which proposed budget shall be based upon the revenue estimate prepared and submitted by the Treasurer. The President may, on his own motion, and shall, at the request of at least three directors, call special meetings of the Board.

ARTICLE III:

Section 1: An Annual Meeting of the corporation shall be held during October or November of each year at such time and place as the Board shall determine. At this meeting, the President shall present a report to the Members.

Section 2: Written nominations of Members for the position of Director, which nominees shall have agreed to serve if elected, shall be received by the Secretary on or before June 15 of each year. Such nominations must be in the form specified by the Secretary and, to be effective, must be found by the Secretary to be in compliance with the requirements of the Articles of Incorporation.

Section 3: Voting shall be conducted by secret ballot in a fair and democratic manner. The Secretary shall prepare written ballots listing all candidates found to be duly nominated and eligible for election. Such ballots shall be mailed to all Members or, at the Secretary's discretion, included in a publication of the corporation mailed to all Members, in either event such mailing to take place on or before July 15 of each year. Duly nominated and eligible candidates shall be afforded equal opportunity to circulate statements of their qualifications and positions to the Members through the corporation's publications and shall have use of the corporation's mailing lists for election-related purposes at no cost to the corporation.

Section 4: Ballots, to be counted, must be received by the Secretary not later than September 15 of each year. As soon thereafter as is reasonably practicable, the ballots shall be counted under the Secretary's supervision. Results shall be publicly announced by the Secretary not later than September 30 of each year, such announcement to include written or telegraphic notice to all candidates for election as well as all current Directors. The candidates receiving the largest number of votes shall be declared elected to the seats being contested. The two candidates receiving the next largest number of votes shall be declared First Alternate and Second Alternate, respectively, to serve until the next annual election of Directors or as provided in Article II, Section 7 hereof.

Two Complete Ground Test Stations Installed at the MicroSat Lab

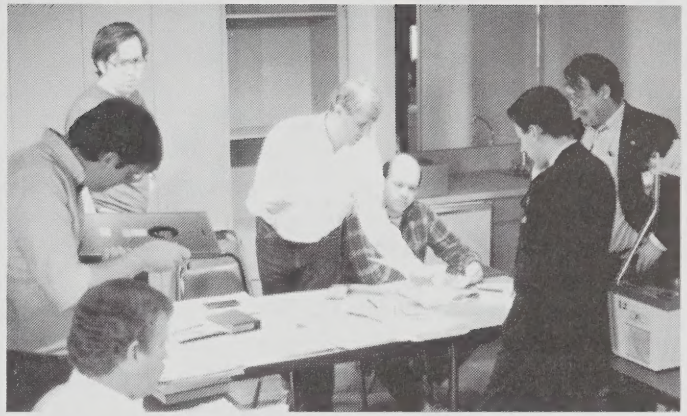
On Sunday, August 10th, two complete PSK packet stations were installed in the AMSAT-NA MicroSat Lab located in Boulder, CO. The task of integrating the transceivers, computers, and building and testing the TAPR PSK demodulators fell on the shoulders of AMSAT-NA Area

Coordinator for Colorado, Jim White, WDØE. These two complete stations will be used for testing the MicroSats while they are in the lab and also during thermal vacuum testing. Later, the two stations will be taken by the AMSAT-NA Launch Preparation Team to Kourou, French Guiana in October and will be used to checkout the spacecraft and make any last minute software updates. Since four spacecraft are being built in parallel and because redundancy is needed at the launch site, Jim felt that it was necessary to have two complete stations. The stations consist of a pair of 2M/70cm multi-mode Kenwood 711/811 transceivers, MFJ-1270 TNC-2, TAPR PSK modems, two XT-class computers with monitors, and an assortment of "rubber duck" antennas, dummy loads, miscellaneous cabling, and power supplies. Also, Jim had to modify the TNC's to allow for a direct connection to the MicroSat flight computers so software uploading and testing can be accomplished without having to use the transceivers. Many of the visitors to the MicroSat Lab in Boulder, CO are immediately impressed with the ground station assembled by Jim. After the launch, this equipment will be used by AMSAT ground-command stations to monitor telemetry and perform daily "housekeeping" chores.

AMSAT-NA would like to express its appreciation to Kenwood for donating their fine transceiver pair to the MicroSat program. Thanks are also in order to Heathkit/Zenith Data Systems who donated a pair of their XT-class computers. Other equipment donations came from MFJ with their TNC-2's (MFJ-1270's), TAPR for the PSK demodulators, and an assortment of "odd-and-ends" from Gateway Electronics of Denver. Without these generous donations of essential equipment to the Amateur satellite program, AMSAT-NA would have to focus its scarce resources to procuring this equipment instead of concentrating on building spacecraft. Once again, AMSAT-NA wants to acknowledge Jim White for the excellent job he has done in putting these stations together and the many fine manufacturers who have helped to make the MicroSat ground test/command stations possible.

Short Bursts

- AMSAT Phase-IV Design Team Member Dick Jansson, WD4FAB, is updating the chapter on space communications for the 1991 edition of *The ARRL Handbook*. Dick will be significantly expanding the material regarding antenna control systems. If you have any suggestions on additional topics or how the chapter can be improved, contact Dick Jansson, WD4FAB, 1130 Willowbrook Trail, Maitland, FL 32751.
- Doug Loughmiller, KO5I, President of AMSAT-NA, wants to inform all AMSAT members that the new AMSAT BBS will now be part of the Dallas Remote Imaging Group's (DRIG) BBS at (214) 394-7438. In an agreement reached with Jeff Wallach, N5ITU, Chairman of the DRIG, all previous AMSAT BBS users are welcomed and encouraged to use this 24-hour a day source of the latest AMSAT News Service (ANS) bulletins and orbital elements. Both the ANS bulletins from AMSAT Headquarters and the orbital elements from WØRPK are posted as soon as they are



At the B.O.D. Meeting. L to R: Bob Twigg (Weber State), Bill Tynan, W3XO, Jack Crabtree, AAØP, Doug Loughmiller, KO5I. (Photo by WA5ZIB)

available each week. Jeff says that these items can be found as "Bulletin #7" each week on the menu. Also, Jeff says for those encountering difficulties using the QK utility to load orbital elements into QUIKTRAK's satellite database, you must first use a text editor to remove everything except the orbital elements after you uploaded them from the DRIG BBS. That means removing the DRIG "banner" and any other extraneous lines that don't contain information related to the orbital elements. Then the QK utility will work fine. Don't have a computer or modem? If you're an AMSAT-NA member, you can also obtain the latest set of Keplerian elements by sending a self-addressed stamped envelope (s.a.s.e.) to AMSAT-NA Headquarters, 850 Sligo Avenue, Suite 600, Silver Spring, MD 20910-4703.

- Our colleagues in Japan have announced that because of power budget problems that operations of FO-12 are being discontinued. The launch of the JAS-1b Project in the near future should fill the void left by this action. If you were using the FO-12 to test your station and prepare it for the forthcoming MicroSat activity, don't despair. Elsewhere in this ASR is an announcement regarding the availability of a FO-12 tape from the AMSAT Software Exchange (courtesy of Jack Mathias).
- Arthur C. Clark, AMSAT Honorary Life Member Number 2001, the inventor of the geostationary communications satellite concept, writes that physicians at John Hopkins University have determined that he does not have the degenerative amyotrophic lateral sclerosis (Lou Gehrig's disease) as once thought. He expects to be with us to see 2001! Mr. Clark, of course, wrote the screenplay and book 2001: *A Space Odyssey*. We wish him well and hope that he will see 2010 (the namesake of another one of his books) as well.
- Headquarters wishes to remind members that they may obtain a free copy of the AMSAT-NA financial statement by sending an s.a.s.e. with two units of postage to headquarters, 850 Sligo Avenue, Suite 600, Silver Spring, MD 20910-4703. Funds donated to AMSAT-NA are expended according to a budget required by the Bylaws, developed by the Financial Committee, approved by the Board of Directors, supervised by the President and Officers, and audited by an independent accounting firm.

- AMSAT-NA is pleased to announce the availability of a new AO-13 PSK telemetry decoding program for the IBM-PC or compatibles that have a minimum of 256K RAM, a 360K disk drive, a serial port, and either a monochrome or color monitor. This new program was written by Jack Mathias, W9FMW, and runs in conjunction with the G3RUH 400 PSK modem. This menu-driven program will decode every "page" of telemetry from AO-13. Once the telemetry is downloaded and placed in a file, it can then be converted to a ASCII text file and uploaded to BBS's so that it is available to hams for further analysis of the AO-13 telemetry. Jack also personalizes each copy of his program with the name, callsign, and address of the station ordering this software from AMSAT-NA. If you would like to obtain this program, contact AMSAT-NA HQ's at (301) 589-6062 for price. VISA and MasterCard accepted.

- If you are building one of the TAPR or G3RUH 1200 Baud PSK modems so that you will be ready for the launch of the MicroSats, a good way to "bench" test your modem is with a tape cassette which Jack Mathias, W9FMW, is offering. You can use this cassette to test out your modems without having to have a "live" signal. Also, you can be sure that the modem and the rest of your system is operating correctly before the launch of the MicroSats early next year. The flip side of the tape contains AO-13 telemetry data for bench testing your G3RUH PSK demodulator without waiting for telemetry from AO-13. (Eliminates the need for tuning your radio to get good copy.) The tape is available from headquarters; call (301) 589-6062 for price.

- AMSAT-NA is seeking to expand its Operations Team to include Canada, Mexico, and the Caribbean. If you are an active OSCAR satellite user and are interested in becoming a volunteer in the AMSAT Field Operation Team, contact AMSAT-NA Vice President of Field Operations, Jack Crabtree, AAØP, 43 Bellewood Dr., Littleton, CO 80123. Jack can be reached in the evenings at (303) 795-7736.

- UoSAT-OSCAR-9 became a Silent Key or Silent "Voice" on Friday, Oct. 13, 1989 after eight years and one week, and over 45,000 orbits. UoSAT-9 was last heard by ZS6CCD at around 12:00 UTC. Tony reported that he heard a strong carrier on 435.025 MHz with a "fast" Doppler shift.

- Official AMSAT-NA callsign badges are available for a minimum donation of \$8.50. The badge is white with your name and callsign engraved in blue. The AMSAT logo is red and the AMSAT name is blue. Please don't accept imitations which are an infringement of our U.S. Registered Trademark. Place your order today to AMSAT-NA Headquarters at (301) 589-6062. Visa and Master Card accepted. Support the Amateur Radio Space Program by ordering yours today!

- Copies are still available from headquarters of *The Beginner's Guide to Oscar-13* by WD5ZDP. The guide is \$7 (includes shipping and handling) in the US, \$8 in Canada, and \$10 elsewhere. Beginners and old-timers alike will find this publication full of helpful hints and tips on how to most effectively communicate through the best OSCAR satellite ever launched!

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Flash!

As we go to press with this issue of ASR, it was announced that another launch date has been established for the MicroSat/UoSAT launch. It is now Jan. 9 UTC (Note: Jan. 8, Eastern Time, U.S.A.). Stay tuned to the AMSAT Nets and the AMSAT News Service (ANS) Bulletins for further information as launch time approaches.

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Amateur Satellite Report (ISSN 0889-6089) is published monthly except February, May, and November for \$15 (inseparable from annual membership dues of \$30) by AMSAT, 850 Sligo Ave., Silver Spring, MD 20910. Second class postage paid at Silver Spring, MD and additional mailing offices. POSTMASTER: send address changes to *Amateur Satellite Report*, 850 Sligo Ave., Silver Spring, MD 20910.